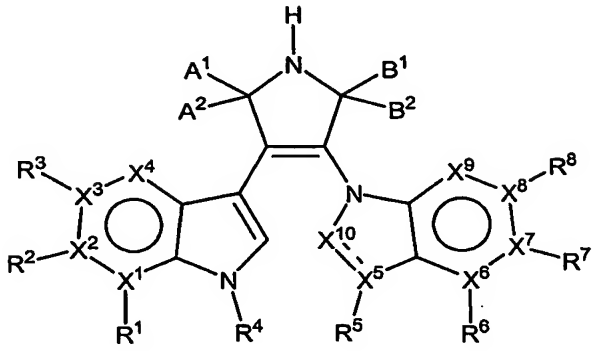
Claims

1. A pharmaceutically active compound represented by formula III;



III

or a pharmaceutically acceptable salt thereof wherein:

X^1 - X^3 are independently C or N;

X^4 is CH or N, wherein not more than two of X^1 - X^4 is N;

when X^5 is N, R^5 is a lone pair, X^{10} is CH and the bond between X^5 and X^{10} is a double bond;

when X^5 is CH, R^5 is H, X^{10} is CH_2 and the bond between X^5 and X^{10} is a single bond;

when X^5 is C, R^5 may be defined as below, X^{10} is CH and the bond between X^5 and X^{10} is a double bond;

X^6 - X^8 are independently C or N;

X^9 is CH or N, wherein not more than two of X^6 - X^9 is N;

R^1-R^3 and R^6-R^8 represent a lone pair or O when each respective X^1-X^3 and X^6-X^8 is N; and

when X^1 - X^3 or X^6 - X^8 is C, each respective R^1 - R^3 and R^6 - R^8 is independently selected from the group consisting of:

a) H, substituted or unsubstituted C(1-8) alkyl, halogen, azido, cyano, nitro, or $NR^{21}R^{22}$, wherein R^{21} represents H or C(1-8) alkyl, and R^{22} represents H, substituted or unsubstituted C(1-8) alkylcarbonyl, substituted or unsubstituted arylcarbonyl, heterocycle, substituted or unsubstituted heteroarylcarbonyl, substituted or unsubstituted C(1-8) alkylaminocarbonyl, substituted or unsubstituted arylaminocarbonyl;

b) OR^{23}, wherein R^{23} is H, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted arylcarbonyl;

c) SR^{23}, wherein R^{23} is defined as in b);

d) $O(CH_2)_j$-R^{24}, $O(CH_2)_j$-O-R^{24}, or $O(CH_2)_j$-S-R^{24}, wherein j is an integer from 1 to 8, and R^{24} is selected from the group consisting of H, substituted or unsubstituted C(1-8) alkyl, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

e) $S(CH_2)_jR^{24}$, $S(CH_2)_j$-O-R^{24}, or $S(CH_2)_j$-S-R^{24}, wherein j and R^{24} are defined as in d);

f) C≡C-R^{25}, C≡C-OR^{25}, or C≡C-CO_2R^{25}, wherein R^{25} is H, substituted or unsubstituted C(1-8) alkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl;

g) CH=CH-R^{25}, CH=CH-OR^{25}, or CH=CH-CO_2R^{25}, having a stereochemistry of E or Z, and R^{25} is defined as in f);

h) C≡C-$NR^{25}R^{26}$ or C≡CCO$NR^{25}R^{26}$, wherein R^{25} is defined as in f), and R^{26} is defined as R^{25}, and R^{25} and R^{26} are selected independently;

i) CH=CH-$NR^{25}R^{26}$ or CH=CHCO$NR^{25}R^{26}$, having a stereochemistry of E or Z, wherein R^{25} and R^{26} are independently defined as in h);

j) $(CH_2)_kR^{25}$, $(CH_2)_k$-$COOR^{25}$, or $(CH_2)_k$-OR^{25}, wherein k is an integer from 2 to 6 and R^{25} is defined as in f);

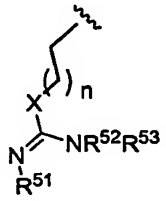
k) $(CH_2)_kNR^{25}R^{26}$, $(CH_2)_kCONR^{25}R^{26}$, wherein R^{25} and R^{26} are selected independently, and R^{25} and R^{26} are defined as R^{25} in f);

l) CH_2XR^{27}, wherein X is O or S and R^{27} is H, substituted or unsubstituted C(1-8) alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl;

R^4 is selected from the group consisting of:

m) H, substituted or unsubstituted C(1-8) alkyl;

n)



wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, arly, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system;

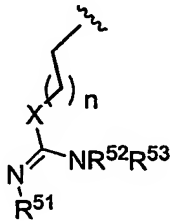
R^5 is selected from the group consisting of:

o) a lone pair when X^5 is N;

and when X^5 is C, R^5 is selected from the group consisting of:

p) H, substituted and unsubstituted C(1-8) alkyl:); or

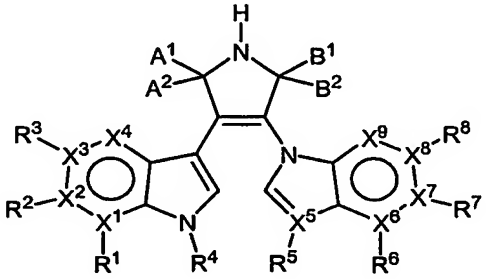
q)



wherein X=O, S, or NH, n=1 to 4 and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, substituted or unsusbstituted C(1-8) alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system; or

when A^1 and A^2, and B^1 and B^2, respectively combine to form oxygen, R^1-R^3 and R^5-R^8 are H, and R^4 is H or CH_3, at least one of $X^1 - X^9$ represents a ring member other than carbon.

2. A pharmaceutically active compound represented by formula I;



I

or a pharmaceutically acceptable salt thereof wherein:

X^1 - X^3 are independently C or N;

X^4 is CH or N, wherein not more than two of X^1 - X^4 is N;

X^6 - X^8 are independently C or N;

X^9 is CH or N, wherein not more than two of X^6 - X^9 is N;

R^1-R^3 and R^6-R^8 represent a lone pair or O when each respective X^1-X^3 and X^6-X^8 is N; and

when X^1 - X^3 or X^6 - X^8 is C, each respective R^1 - R^3 and R^6 - R^8 is independently selected from the group consisting of:

a) H, substituted or unsubstituted C(1-8) alkyl, halogen, azido, cyano, nitro, or $NR^{21}R^{22}$, wherein R^{21} represents H or C(1-8) alkyl, and R^{22} represents H, substituted or unsubstituted C(1-8) alkylcarbonyl, substituted or unsubstituted arylcarbonyl, heterocycle, substituted or unsubstituted heteroarylcarbonyl, substituted or unsubstituted C(1-8) alkylaminocarbonyl, substituted or unsubstituted arylaminocarbonyl;

b) OR^{23}, wherein R^{23} is H, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted arylcarbonyl;

c) SR^{23}, wherein R^{23} is defined as in b);

d) $O(CH_2)_j$-R^{24}, $O(CH_2)_j$-O-R^{24}, or $O(CH_2)_j$-S-R^{24}, wherein j is an integer from 1 to 8, and R^{24} is selected from the group consisting of H, substituted or unsubstituted C(1-8) alkyl, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

e) $S(CH_2)_jR^{24}$, $S(CH_2)_j$-O-R^{24}, or $S(CH_2)_j$-S-R^{24}, wherein j and R^{24} are defined as in d);

f) C≡C-R^{25}, C≡C-OR^{25}, or C≡C-CO_2R^{25}, wherein R^{25} is H, substituted or unsubstituted C(1-8) alkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl;

g) CH=CH-R^{25}, CH=CH-OR^{25}, or CH=CH-CO_2R^{25}, having a stereochemistry of E or Z, and R^{25} is defined as in f);

h) C≡C-$NR^{25}R^{26}$ or C≡C$CONR^{25}R^{26}$, wherein R^{25} is defined as in f), and R^{26} is defined as R^{25}, and R^{25} and R^{26} are selected independently;

i) CH=CH-$NR^{25}R^{26}$ or CH=CH$CONR^{25}R^{26}$, having a stereochemistry of E or Z, wherein R^{25} and R^{26} are independently defined as in h);

j) $(CH_2)_kR^{25}$, $(CH_2)_k$-$COOR^{25}$, or $(CH_2)_k$-OR^{25}, wherein k is an integer from 2 to 6 and R^{25} is defined as in f);

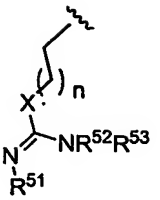
k) $(CH_2)_kNR^{25}R^{26}$, $(CH_2)_kCONR^{25}R^{26}$, wherein R^{25} and R^{26} are selected independently, and R^{25} and R^{26} are defined as R^{25} in f);

l) CH_2XR^{27}, wherein X is O or S and R^{27} is H, substituted or unsubstituted C(1-8) alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl;

R^4 is selected from the group consisting of:

m) H, substituted or unsubstituted C(1-8) alkyl;

n)



wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, arly, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system;

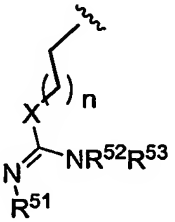
R^5 is selected from the group consisting of:

o) a lone pair when X^5 is N;

and when X^5 is C, R^5 is selected from the group consisting of:

p) H, substituted and unsubstituted C(1-8) alkyl:); or

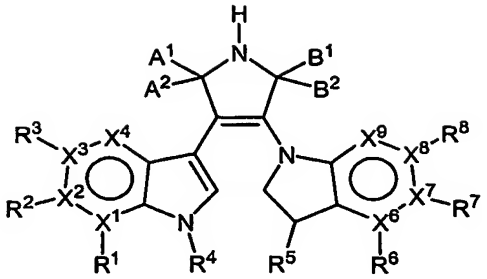
q)



wherein X=O, S, or NH, n=1 to 4 and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, substituted or unsusbstituted C(1-8) alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system; or

wherein in formula I, when A^1 and A^2 , and B^1 and B^2 , respectively combine to form oxygen, R^1-R^3 and R^5-R^8 are H, and R^4 is H or CH_3, at least one of $X^1 - X^9$ represents a ring member other than carbon.

3. A pharmaceutically active compound represented by formula II;



II

or a pharmaceutically acceptable salt thereof wherein:

X^1 - X^3 are independently C or N;

X^4 is CH or N, wherein not more than two of X^1 - X^4 is N;

X^6 - X^8 are independently C or N;

X^9 is CH or N, wherein not more than two of X^6 - X^9 is N;

R^1-R^3 and R^6-R^8 represent a lone pair or O when each respective X^1-X^3 and X^6-X^8 is N; and

when X^1 - X^3 or X^6 - X^8 is C, each respective R^1 - R^3 and R^6 - R^8 is independently selected from the group consisting of:

a) H, substituted or unsubstituted C(1-8) alkyl, halogen, azido, cyano, nitro, or $NR^{21}R^{22}$, wherein R^{21} represents H or C(1-8) alkyl, and R^{22} represents H, substituted or unsubstituted C(1-8) alkylcarbonyl, substituted or unsubstituted arylcarbonyl, heterocycle, substituted or unsubstituted heteroarylcarbonyl, substituted or unsubstituted C(1-8) alkylaminocarbonyl, substituted or unsubstituted arylaminocarbonyl;

b) OR^{23}, wherein R^{23} is H, substituted or unsubstituted alkylcarbonyl, substituted or unsubstituted arylcarbonyl;

c) SR^{23}, wherein R^{23} is defined as in b);

d) $O(CH_2)_j$-R^{24}, $O(CH_2)_j$-O-R^{24}, or $O(CH_2)_j$-S-R^{24}, wherein j is an integer from 1 to 8, and R^{24} is selected from the group consisting of H, substituted or unsubstituted C(1-8) alkyl, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl;

e) $S(CH_2)_jR^{24}$, $S(CH_2)_j$-O-R^{24}, or $S(CH_2)_j$-S-R^{24}, wherein j and R^{24} are defined as in d);

f) C≡C-R^{25}, C≡C-OR^{25}, or C≡C-CO_2R^{25}, wherein R^{25} is H, substituted or unsubstituted C(1-8) alkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl;

g) $CH=CH-R^{25}$, $CH=CH-OR^{25}$, or $CH=CH-CO_2R^{25}$, having a stereochemistry of E or Z, and R^{25} is defined as in f);

h) $C\equiv C-NR^{25}R^{26}$ or $C\equiv CCONR^{25}R^{26}$, wherein R^{25} is defined as in f), and R^{26} is defined as R^{25}, and R^{25} and R^{26} are selected independently;

i) $CH=CH-NR^{25}R^{26}$ or $CH=CHCONR^{25}R^{26}$, having a stereochemistry of E or Z, wherein R^{25} and R^{26} are independently defined as in h);

j) $(CH_2)_kR^{25}$, $(CH_2)_k-COOR^{25}$, or $(CH_2)_k-OR^{25}$, wherein k is an integer from 2 to 6 and R^{25} is defined as in f);

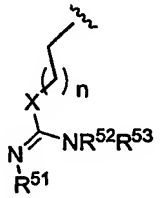
k) $(CH_2)_kNR^{25}R^{26}$, $(CH_2)_kCONR^{25}R^{26}$, wherein R^{25} and R^{26} are selected independently, and R^{25} and R^{26} are defined as R^{25} in f);

l) CH_2XR^{27}, wherein X is O or S and R^{27} is H, substituted or unsubstituted C(1-8) alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl;

R^4 is selected from the group consisting of:

m) H, substituted or unsubstituted C(1-8) alkyl

n)



wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, arly, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system;

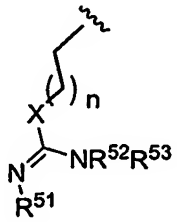
R^5 is selected from the group consisting of:

o) a lone pair when X^5 is N;

and when X^5 is C, R^5 is selected from the group consisting of:

p) H, substituted and unsubstituted C(1-8) alkyl:); or

q)



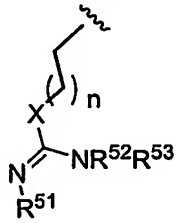
wherein X=O, S, or NH, n=1 to 4 and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, substituted or unsusbstituted C(1-8) alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system; or wherein in formula I, when A^1 and A^2, and B^1 and B^2, respectively combine to form oxygen, R^1-R^3 and R^5-R^8 are H, and R^4 is H or CH_3, at least one of $X^1 - X^9$ represents a ring member other than carbon.

4. A compound according to claim 1 wherein X^5 is C, X^{10} is CH and the bond between X^5 and X^{10} is a double bond.

5. A compound according to claim 1 wherein X^5 is N, R^5 is a lone pair, X^{10} is CH and the bond between X^5 and X^{10} is a double bond.

6. A compound according to claim 1 wherein X^5 is CH, R^5 is H, X^{10} is CH_2 and the bond between X^5 and X^{10} is a single bond.

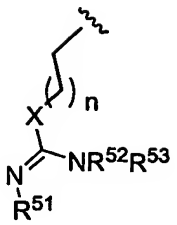
7. A compound according to claim 1 wherein R^4 is



wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system.

8. A compound according to claim 7 wherein $R^{51\ to\ 53}$ are H.

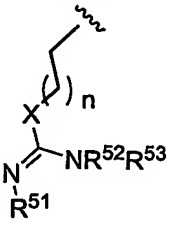
9. A compound according to claim 4 wherein R^4 is



wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system.

10. A compound according to claim 9 wherein $R^{51\ to\ 53}$ are H.

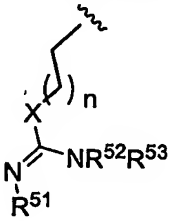
11. A compound according to claim 5 wherein R^4 is



wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system.

12. A compound according to claim 11 wherein $R^{51\ to\ 53}$ are H.

13. A compound according to claim 6 wherein R^4 is

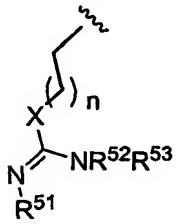


wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl,

substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system.

14. A compound according to claim 13 wherein $R^{51\ to\ 53}$ are H.

15. A compound according to claim 4 wherein R^4 is methyl and R^5 is

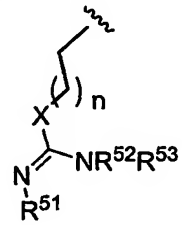


wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system.

16. A compound according to claim 15 wherein $R^{51\ to\ 53}$ are H.

17. Compounds 143, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 159, 160, 166, 167, 168, 170.

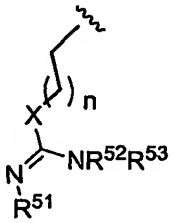
18. A compound represented by formula I as defined in claim 2 wherein R^4 is methyl, X^5 is carbon and R^5 is



wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system.

19. A compound according to claim 18 wherein R^{51-53} are H.

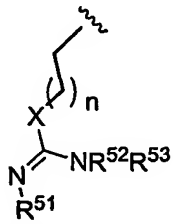
20. A compound represented by formula I as defined in claim 2 wherein R^4 is



wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system; or

21. A compound according to claim 20 wherein R^{51-53} are H.

22. A compound represented by formula II as defined in claim 3 wherein R^4 is



wherein X=O, S, or NH, n=1 to 4, and R^{51} is H, R^{52} and R^{53} are independently chosen from the group consisting of H, alkyl, substituted alkyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, or R^{51} and R^{52} are combined to form a heteroalkyl, substituted heteroalkyl, heteroaryl, or substituted heteroaryl ring system.

23. A compound according to claim 22 wherein R^{51-53} are H.

24. Compounds 167 and 168.

25. A method of treatment or prevention of a condition resulting from loss of growth and cellular differentiation control, as in cancer, by administration of an effective amount of a compound according to any one of claims 1 to 24 to a patient in need thereof.

26. The method of treatment according to claim 25, wherein said compound is combined with an anti-neoplastic, an anti-neurotoxic or an antisense compound.

27. A pharmaceutical composition comprising a pharmaceutically effective amount of a compound according to any one of claims 1 to 24 in combination with a pharmaceutically acceptable carrier.

28. The pharmaceutical composition according to claim 27, additionally comprising an anti-neoplastic, an anti-neurotoxic, an anti-depressant or an antisense compound.

29. A method of treating cancer or inflammatory diseases comprising administering to a subject in need thereof a compound according to any one of claims 1 to 24.

30. Use of any one of compounds 133 to 142 and 169 as an an anticancer agent.